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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Niki S. Woodhead

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EXAMINER

GARCIA, ERNESTO

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/552,875	Applicant(s) WOODHEAD ET AL.	
	Examiner ERNESTO GARCIA	Art Unit 3679	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 21 is/are pending in the application.
- 4a) Of the above claim(s) 4-7 and 9-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,8,13,14,16 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Restriction

Applicants' election without traverse of Group I, claims 1-3, 8, and 13-16, in the reply filed on January 23, 2009 is acknowledged.

Claims 4-7 and 9-12 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on January 23, 2009.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "2" has been used to designate both outwardly facing protrusions (Figures 1, 2, and 4) and inwardly facing protrusions (Figures 3, 5, and 6).

The drawings are objected to because the second unformed annular portion 7 in Figure 2 is not identified to render there being unformed annular portions. Further, the other figures should identify the “unformed annular portions” so that one can one know what portions the claims are referring to.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended”. If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

the new description to reference character “2” is inconsistent through out the disclosure since not all descriptions of reference character “2” have been changed. Accordingly, the description “waves” should be --outwardly facing protrusions--or “inwardly facing protrusions”. This occurs, for instance, on page 14, lines 17, and 25, of the original disclosure. Appropriate correction is required.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: “all of the protrusion extending radially outwards between unformed annular portions of the band” recited in claim 1, lines 3-5, “an innermost surface defined by a plurality of unformed annular portions” recited in claim 21, line 3-4, “an outermost surface defined by a plurality of radial protrusions” recited in claim 21, line 4, “each protrusion extending radially outwards between a pair of unformed annular portions” recited in claim 21, line 5-6, and “the guide portion ... extending axially from an endmost annular portion” recited in claim 21, lines 7-8.

Claim Objections

Claims 1 and 21 is objected to because of the following informalities:

regarding claim 1, "outwards" in line 4 should --outward--; and,
regarding claim 21, --the-- should be inserted before "unformed" in line 5,
"outwards" in line 5 should be --outward--, and the first occurrence of "the" should be
--an--. Appropriate correction is required. For purposes of examining the instant
invention, the examiner has assumed these corrections have been made.

Claim Rejections - 35 USC § 112

Claims 1-3, 8, and 13-16 are rejected under 35 U.S.C. 112, second paragraph,
as being indefinite for failing to particularly point out and distinctly claim the subject
matter which applicant regards as the invention.

Regarding claim 1, the recitation "an endmost unformed annular portion of the
band" in lines 10-11 makes unclear whether this is one of the unformed annular portions
of the band recited in lines 4-5, or a third unformed annular portion. For purposes of
this Office action, the examiner has considered the endmost unformed annular portion
being one of the unformed annular portions 7, where all of the protrusions are in
between.

Regarding claims 2, 3, 8, and 13-16, the claims depend from claim 1 and
therefore are indefinite.

Claim Rejections - 35 USC § 103

Claims 1-3, 8, 13, 14, 16, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cramer et al., 4,981,390.

Regarding claim 1, Cramer et al. disclose, in Figure 7, a tolerance ring comprising a band **60** of resilient material. The band **60** has a plurality of protrusions **64** (all those extending outwardly) formed therein and a guide portion **82** (see marked-up attachment). All of the protrusions **64** are extending radially between unformed annular portions **A1**, **A2** of the band. The corrugated protrusions **64** form a protrusion load bearing area. The unformed annular portions **A1**, **A2** form an unformed annular portion load bearing area. The guide portion **82** is contiguous with and extends axially from one of the unformed annular portions **A2**. The guide portion **82** comprises at least one guide surface **A3** contiguous with the unformed annular portion load bearing area and inclined relative to an axis of the band **60** in a radial direction. A free end **A4** of the guide portion **82** defines an opening larger than that defined by the unformed annular portions **82** of the band **60**.

However, Cramer et al. fail to disclose the protrusions extending radially outward and the guide portion being inclined in the same radial direction as the protrusions. Cramer et al. suggests protrusions that extend radially outward (see Figure 12) or radially inward (see Figure 9) as an alternative configuration for grasping an outer

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component rather than grasping an internal component (col. 2, lines 27-34). Therefore, as taught by Cramer et al., themselves, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reverse the direction at which the protrusions extend so that the protrusions grasp or engage an outer component. Given the modification, the guide portion 82 would have inclined in the same radial direction as the protrusions since the protrusion would have extended outwardly.

Regarding claim 2, given the modification, the angle of inclination of the guide surface **A3** relative to the axis would have been constant along the length of the guide surface.

Regarding claims 3 and 8, the guide portion **82** extends from the whole circumference of the band (col. 6, lines 46-50).

Regarding claim 13, the guide portion **82** is sufficiently smooth.

Regarding claim 14, the unformed annular portion load bearing area is sufficiently sized to prevent torque ripple.

Regarding claim 16, the band **60** is formed from a strip of resilient material curved into a substantially annular shape with a gap between ends of the strip.

Regarding claim 21, Cramer et al., disclose, in Figure 7, a tolerance ring comprising an annular band 60 of resilient material having an innermost surface defined by a plurality of unformed annular portions 96 (see Figure 10) and an outermost surface defined by a plurality of radial protrusions 64 formed in the band 60. Each protrusion 64 extends radially between a pair of the unformed annular portions 96. A guide portion 82 is at one end of the band 60. The guide portion 82 is contiguous with and extending axially from an endmost unformed annular portion A2 (see marked-up attachment) and comprises a guide surface which is contiguous with and flares outwardly from the innermost surface. However, Cramer et al. fail to disclose each of the protrusions extending radially outward.

Cramer et al. suggests protrusions that extend radially outward (see Figure 12) or radially inward (see Figure 9) as an alternative configuration for grasping an outer component rather than grasping an internal component (col. 2, lines 27-34). Therefore, as taught by Cramer et al., themselves, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reverse the direction at which the protrusions extend so that the protrusions grasp or engage an outer component. Given the modification, the guide portion 82 would have inclined in the same radial direction as the protrusions since the protrusion would have extended outwardly.

Claims 1-3, 8, 13-16, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants' admitted prior art in view of Blaurock et al., 3,838,928.

Regarding claim 1, applicants admit, in Figure 2, a tolerance ring comprising a band **1** of resilient material. The band **1** has protrusions **2** extending radially outward between unformed annular portions of the band. The corrugated protrusions form a protrusion load bearing area and the unformed annular portion form an unformed annular portion load bearing area. However, the admitted prior art fails to disclose a guide portion being contiguous with and extends axially from one of the unformed annular portions of the band, the guide portion comprising at least one guide surface inclined relative to the axis of the band **1** in the radial direction of the protrusions **2** such that a free end of the guide portion defines an opening of a size other than that defined by the band.

Blaurock et al. teach, in Figure 7, a guide portion **140** being contiguous with and extends axially from an unformed annular portion of the band **124** (note that the unformed annular portion is also between the projections and thus the guide portion blends between the projections where is not formed). Blaurock et al. further teach that the guide portion **140** comprises at least one guide surface inclined relative to the axis of the band in a radial direction of corrugated protrusions **138** such that a free end of the guide portion **140** defines an opening of a size other than that defined by the band **124**; however, Blaurock et al. does not explicitly state the reason for the guide surface. Common sense reveals that tapering the ends of the rings allows insertion of a shaft much easier than a ring not having a guide portion. Therefore, as taught by Blaurock et

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al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the ring of the admitted prior art with a guide portion so that the bearing 3 can be inserted into the hole of the ring with much ease.

Given the modification, the unformed annular portion would have been configured to distribute a load from the unformed annular portion load bearing area over a portion of a first component that is to be engaged with the unformed annular portion.

Regarding claim 2, the angle of inclination of the guide surface relative to the axis is constant along the length of the guide surface.

Regarding claims 3 and 8, the guide portion would have extended from the whole circumference of the band.

Regarding claim 13, the guide portion **140** is sufficiently smooth.

Regarding claim 14, the unformed annular portion load bearing area is sufficiently sized to prevent torque ripple.

Regarding claim 15, the unformed annular portion engages with a bearing **3** and all of the protrusions engage with a wall of a bore in a moveable arm **5** of a computer

disk drive. The moveable are is formed of a material that is softer than that of the bearing.

Regarding claim 16, the band is formed from a strip of resilient material curved into a substantially annular shape with a gap between ends of the strip.

Regarding claim 21, applicants admit, in Figure 2, a tolerance ring comprising an annular band **1** of resilient material having an innermost surface defined by a plurality of unformed annular portions and an outermost surface defined by a plurality of radial protrusions **2** formed in the band **1**. Each protrusion **2** extends radially outward between a pair of the unformed annular portions. However, the admitted prior art fails to provide a guide portion at one end of the band **1** and the guide portion being contiguous with and extending axially from an endmost unformed annular portion.

Blaurock et al. teach, in Figure 7, a guide portion **140** being contiguous with and extends axially from an unformed annular portion of the band **124** (note that the unformed annular portion is also between the projections and thus the guide portion blends between the projections where is not formed). Blaurock et al. further teach that the guide portion **140** comprises at least one guide surface inclined relative to the axis of the band in a radial direction of corrugated protrusions **138** such that a free end of the guide portion **140** defines an opening of a size other than that defined by the band **124**; however, Blaurock et al. does not explicitly state the reason for the guide surface.

Common sense reveals that tapering the ends of the rings allows insertion of a shaft much easier than a ring not having a guide portion. Therefore, as taught by Blaurock et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the ring of the admitted prior art with a guide portion so that the bearing 3 can be inserted into the hole of the ring with much ease.

Response to Arguments

Applicants' arguments with respect to Cramer et al., 4,981,390, have been considered but are moot in view of the new ground of rejection.

Applicants argue that Cramer et al. show angled tabs that press against chamfered edges of the bore of the outer member and thus do not facilitate alignment. In response, it should be noted that the angle of the tabs, which provides for a taper, would inherently facilitate alignment once the projections are reversed such that the projections extend outwardly rather than inwardly. Further, it should be noted that Cramer et al. suggest that the tabs can be further extended according to a particular application (see col. 6, lines 50-52) and reversing the projections is an obvious alternative.

With regards to Baurock, applicant argues that not all of the protrusions extend radially outward. In response, it should be first noted that the claim does not exclude inwardly extended protrusions and that all those that extend outward are all extending

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outwardly. Further, even if the claim recited a closed ended limitation such that only outward protrusions are recited, the combination is still applicable since, the primary reference only teaches outward projections. The combined teachings would have suggested at least one of the end portions of the ring tapered whether the projections are inside, outside, or both inside and outside.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bowden, 1,469,880, and Weston, GB-866,678, teach tapered end portions of a corrugated ring. Facklam, GB-414,631, teaches a tapered end portion as a guide.

Applicants' amendment necessitated the new grounds of rejection presented in this Office action. In particular, the new recitations "extending radially outwards between unformed annular portions of the band" in claim 1, lines 3-5, "at least one guide surface that is contiguous with the unformed annular portion load bearing area" in claim 1, lines 11-12, and "each protrusion extending radially outwards between a pair of unformed annular portions" in claim 21, lines 5-6, necessitated the new grounds of rejection. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernesto Garcia whose telephone number is 571-272-7083. The examiner can normally be reached from 9:30AM-6:00PM. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached at 571-272-7087.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/E. G./

Examiner, Art Unit 3679

April 14, 2009

Attachment(s):one marked-up page of Cramer, Jr. et al., 4,981,390

/Daniel P. Stodola/
Supervisory Patent Examiner, Art Unit 3679

FIG. 7

